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Meeting of the Working Groups of the U.S. National Academy of Sciences
and the Academy of Sciences of the USSR
on Biological Weapons Control
Skytop, Pennsylvania
December 5-7, 1990

Delegations from the U.S. National Academy of Sciences Committee on International Security and Arms Control subgroup on biological weapons control and from the Academy of Sciences of the U.S.S.R. met December 5-7, 1990, in Skytop, Pennsylvania.

The members of the U.S. delegation were: Dr. Joshua Lederberg, chairman; Dr. Robert Chanock; Dr. Thomas Monath; Dr. Alexis Shelokov; Dr. John Steinbruner; Mr. Glenn Schweitzer; Ms. Lynn Rusten; and Dr. Donald A. Henderson (see attachment #1/II-A).

The members of the Soviet delegation were: Academician Vadim Ivanov, head of delegation; Academician Sergei Prozorovskiy; Academician Dmitry Lvov; Academician Sergei Drozdov; Academician Anatoly Vorobyev; Corresponding Member Evgeniy Sverdlov; Dr. Konstantin Rayevskiy; Dr. Sergei Oznobischev; and Dmitry F. Makarov (see attachment #1/I).

The agenda of the private session of the two working groups on December 6-7 consisted of the following items (see attachment #2):

1. Discussion of site visit to the vaccine production facility.
2. Systems of disclosure based on K. Rayevskiy's paper.
3. Cooperation in areas of virology, microbiology, epidemiology, and immunology with special emphasis on early warning of pandemics throughout the world.
4. How can civilian medical professionals in each country achieve credible oversight and self-inspection of military research and development programs in microbiology and infectious disease?
5. What are good questions for the upcoming Biological Weapons Convention Five Year Review Conference?

Summary Report

The meeting spanned three days. The first day was spent visiting the Salk Institute-Government Services Division vaccine production facility

located in Swiftwater, PA. This facility provides vaccines under contract for the U.S. Army Biological Weapons Defense Program. The visit represented a continuation of the series of site visits by members of these two Academy delegations to promote greater openness about each side's Biological Weapons Defense Program. The two delegations visited USAMRIID at Fort Detrick in 1988 and the American delegation visited the Institute of Military Medicine in Leningrad in 1989.

The morning of the second day was devoted to a scientific symposium where four Americans and one Soviet presented their research in areas relevant to this meeting. (See attachment #3 for the program at the Swiftwater facility and the list of symposium speakers and presentation topics. Attachment #1 in its entirety indicates all the individuals invited to participate in the visit to Swiftwater and the scientific symposium.)

The remainder of the meeting was attended only by the Soviet delegation, the members of the (American) National Academy of Sciences Working Group on Biological Weapons Control, and, by special invitation, Dr. Donald A. Henderson. This report will summarize only the private session of the two Academy delegations, consisting of the five-point agenda listed above.

Discussion of Site Visit to the Vaccine Production Facility

The reaction of the Soviet delegation to the day long visit to the Salk Institute-Government Services Division was overwhelmingly positive.

Rayevskiy, from the Institute of Military Medicine in Leningrad, praised the reciprocal site-visits and presented photographs from the American delegation's visit to his institute in 1989. Thanking the Americans for arranging the visit, Rayevskiy said he found it interesting as a specialist in this field to see what his American colleagues were doing in the field of development of vaccines for the military. He said his report of the visit would receive great attention from his superiors in military medicine.

Rayevskiy said he particularly appreciated the thorough preparation of the visit to the Salk facility, noting the difficulties he had in arranging the American visit to his institute last year. He praised the openness of the Salk staff in discussing their activities and showing their labs.

Rayevskiy said he had been officially delegated to express the support of his superiors for joint research with USAMRIID in the areas of epidemiology

for military personnel, including for UN peacekeeping troops; and epidemiology for the military which can be applied to any population group.

Vorobyev added his thanks for the visit, noting that it was a wonderful facility with the most modern equipment, capable of carrying out work large in scope. He said the open atmosphere left a wonderful impression. He suggested that the two sides should share their work. For instance, he said plague occurs in both countries; the two sides could share information about the disease and approaches to vaccination. He said both sides had different approaches to development of a typhus vaccine and could exchange information in that area. Finally, noting that the Soviets are producing a vaccine against anthrax, he said there could be bilateral contacts in this area. (Vorobyev later privately invited a USAMRIID delegation to see the anthrax vaccine production facility in Stavropol, coincidentally Gorbachev's home town.)

Prozorovskiy echoed the praise of the visit and the facility. He said he admired the configuration of the biocontainment labs, the excellent equipment, the compact design of the workspace, and the warmth of the people he met there.

Prozorovskiy said that, thinking in terms of an actual site visit under a treaty verification regime, this kind of facility is conducive to being converted within two or three days. He said therefore, that greater attention should be given to regulatory approaches. Prozorovskiy said the American regulatory and reporting systems described by the Salk staff were impressive and important. He said a criterion of ethics was also extremely important.

Lederberg emphasized that this was of course a visit, and not a formal inspection. However, the idea was to think through how an inspection would work. Lederberg said he personally thought that conducting inspections to detect violations of the Biological Weapons Convention was probably futile, but the willingness to submit to inspections was important. He also agreed about the importance of the internal legal system of controls and regulations that govern these institutions.

Lederberg asked whether there was any further information about the facility which the Soviets would have wanted. In response, Prozorovskiy said it would be a form of mutual reassurance if every facility had an official brochure describing its activities and structure, etc. The Salk facility did

not have such a brochure. Prozorovskiy passed out a brochure on his institute.

Rayevskiy agreed this visit was not an inspection; he characterized it as a good will gesture on the part of the U.S. Government. He suggested that rigid inspections would be less necessary if each side had researchers in the other side's institutes: Then it would be difficult to engage in illegal work. He said the exchange of post-docs would be helpful.

Sverdlov said if he were an inspector, he would have asked for general things like a declaration of intent, purposes and methodology of conducting research; a list of publications, personnel and their bios; and to see the work log of the director of the institute. Sverdlov also expressed gratitude for the visit, saying the facility was one of the best laid out and organized labs he had ever seen.

Steinbruner re-emphasized Rayevskiy's point that it is useful to consider joint vaccine development, joint research, and continuous on-going bilateral collaboration of military medical scientists to promote confidence: This may be a more fruitful path than conducting visits and inspections. Lederberg noted that the agreement signed that morning between USAMRIID and the Soviet Academy of Medical Sciences Institute of Poliomyelitis and Viral Encephalitides on joint vaccine development for hemorrhagic fever with renal syndrome was a living example of such cooperation.

Drozdov also expressed his gratitude and invited the Americans to visit his institute. He expressed great pleasure with the cooperative agreement signed that day. He said it was a first that two such institutions have reached agreement on cooperative work and said he hoped all our research would be conducted in this spirit.

Systems of Disclosure Based on K. Rayevskiy's Paper

This discussion built on a series of discussions over the last several years between these delegations about how to delineate permitted and unpermitted levels of BW research for defensive purposes under the BWC. The working groups have been discussing a system of classifying infectious agents into categories and then defining quantitative amounts of agents for each category which would a) be legal; b) require disclosure; or c) be prohibited.

Monath made the lead presentation at this meeting (attachment #4) in

which he critiqued the categorization of agents and associated quantitative limits on which the working groups had tentatively agreed previously. He suggested an alternative model based on the classification scheme developed by the Subcommittee on Arbovirus Laboratory Safety (SALs) of the American Committee on Arthropod-borne Viruses.

The SALs scheme, which has been used to classify arboviruses and hemorrhagic fever viruses, also provides an algorithm for assigning new viruses to a biohazard group. Monath suggested this algorithm be extended to provide a tighter framework for compiling a list of potential BW agents. He suggested the criteria might include consideration of the characteristics of the disease in humans, the virulence of the agent for animal models by the aerosol route of exposure, the biological stability of the agent in aerosol, the yield of agent obtainable in culture, and the availability of defensive measures. Monath suggested similar criteria could probably be adapted to apply to all infectious agents. He argued that it would be possible to draw upon existing data to develop a final classification of potential BW agents using these criteria, appropriately modified for bacteria and toxins.

Furthermore, Monath said determination of quantitative limits for agents in the "Serious" category should be agent-specific rather than category-specific because of the wide variation in virulence or infectious dose. He suggested the groups first try to establish reasonable quantitative limits for several agents with well-established BW potential, such as VEE, anthrax and Q fever. The establishment of quantitative limits for these agents of traditional and continuing BW concern would provide a systematic framework for consideration of the expanded list.

In the ensuing discussion, Rayevskiy agreed that the task of categorizing agents is a complex one. He expressed appreciation of Monath's presentation. Rayevskiy said the criteria for classifying agents must be epidemiological and military-tactical so as to single out for serious restriction only those agents with a potential for real danger. He said one did not want to either too strictly limit harmless agents or not sufficiently limit dangerous agents. Rayevskiy suggested that research to classify agents should be carried out by numerous labs of world stature, probably with the participation of the WHO. The results should be available to the world community.

Lvov agreed with Rayevskiy the process should eventually be internationalized, but said it was essential to come to agreement bilaterally first and then present the results to other countries.

Prozorovskiy agreed with Monath about the need to set limits on an agent-by-agent basis.

Steinbruner recalled that when the three-category scheme was first discussed, the intent was to identify the likely candidates for tactical military use--the agents of most interest to the major military institutions. The four criteria for dangerous agents were: an efficient rate of transmission, a high rate of individual infection, high virulence and rapid effect. There is no single agent that is high in all these categories. The intent was to prevent the creation of such an agent and lessen restrictions on other agents. LD50 was used to give a common measure.

Steinbruner said Rayevskiy's point--that an additional needed measure is the amount of material needed to create an LD50--was important. He said this might call for a four-category scheme.

Steinbruner admitted that the most likely offensive use is by a terrorist for putative strategic purposes, and that the criterion of timeliness of effect was not of great significance in such a case. He said the idea was to get the superpowers to agree on a scheme designed to restrict the likely candidate agents for tactical military use. Then the arrangement could be extended or adjusted to fit other countries and uses. He said it was probably practical to design a categorization scheme applicable to the U.S. and Soviet programs and then later on elaborate a criterion for agents more likely to be used by terrorists.

Lederberg said it was important to have a system of permissions as well as of prohibitions. He agreed that a criterion of scale was important, i.e., it is okay to work with a liter of anthrax, but not with one hundred liters.

Rayevskiy said that each scientist seemed to have his own subjective list of potentially dangerous agents. For instance, he noted that Steinbruner did not place smallpox in the Serious category. Rayevskiy said it should be in that category because it is highly dangerous and contagious.

Vorobyev said although the problem is difficult, it is soluble. He said one could a) list agents that have been commonly discussed as potential BW agents; and b) list agents according to certain criteria of risk such as

agents that produce massive death, can be aerosolized or spread infection through water, can be mass produced, and have available countermeasures. He said by these criteria, smallpox, plague, VEE, anthrax and tularemia would be on the list. Another criterion would be the volume mass needed for vaccines.

Lederberg said that for certain agents of no BW interest, some work should be permitted with no reporting requirements; for some agents only work over a certain threshold would require reporting; finally, there would be a threshold beyond which work would be entirely forbidden. There would be an international scientific committee to consider appeals for exceptions to these rules for legitimate scientific purposes.

Oznobischev said this was clearly a long-term discussion with no immediate conclusion. He said it would be useful for this group to at least define for itself what is legitimate for peaceful scientific purposes for each agent, what is the grey area, and what falls into the range of unequivocally military purposes.

Prozorovskiy said he liked Vorobyev's approach of creating a rating system. He said the system should include the public health requirements for each agent, for instance that vaccines need to be made for anthrax. He said each side could declare the amounts of agent necessary to conduct this legitimate work for public health.

Rayevskiy said he agreed that the list should be a living list to which additions and subtractions will be made. He suggested perhaps the U.S. military medical community and his institute should work on developing this list.

Chanock said the situation is too complex to subject to algorithmic analysis. All the agents we commonly think of would drop out of this list. He said we had to be concerned about the potential to alter a virus like influenza to carry genetic information for a potent toxin. He said we needed to be concerned about forbidden experiments of this type. He said the focus of our activities will have to change to terrorist attack, not attack for tactical military purposes.

Rayevskiy said it would be impossible to prohibit the small quantities required for a terrorist threat.

Lederberg said he would be very reluctant to impose excessive regulations that would discourage legitimate scientific experiments.

Steinbruner reiterated that the purpose of the scheme was to keep the "Extreme" category empty. It is important to establish an arrangement of bilateral regulation in order to establish a basis for cooperation toward other mutual threats and threats of new agents.

Ivanov recalled that the objective of these working groups was to give some advice to our respective governments before the next BWC Review Conference. He said everyone seemed to agree that it is useful but difficult to try to come up with a scheme of classification of agents and quantitative limits. He said perhaps an international group could be established at the Review Conference to try to do this; or, these working groups could continue to work on it separately or together.

Lederberg said the final working out of such a scheme would have to be done on a broader international basis, and would probably fall to an expert committee of the Review Conference. He noted how interesting it was that initially these two working groups agreed rapidly on the classification of agents, but now after taking a second look both sides have raised serious questions.

Vorobyev suggested listing three categories: agents with potential mass destruction/military-tactical use; agents with potential terrorist use; and bio-engineered strains.

Sverdlov said regulatory formulas have already been thought through for recombinant DNA in the U.S., the U.S.S.R. and the U.K. He said we must develop principles of monitoring and confidence building, and decide what to do with already existing agents. He suggested a small group of two Americans and two Soviets (Monath, Steinbruner, Vorobyev and Rayevskiy) continue trying to develop these principles of categorization.

Cooperation in Areas of Virology, Microbiology, Epidemiology, and Immunology with Special Emphasis on Early Warning of Pandemics Throughout the World

Dr. Donald A. Henderson, who is not a regular member of the NAS Working Group, was invited to attend the session and make a special presentation on international health and vaccination programs.

Noting that nearly 70% of children in the world were being vaccinated against polio, Henderson recalled that in 1985 the Pan American Health Organization decided to eradicate poliomyelitis from the Western hemisphere.

He said now the WHO has proposed the global eradication of polio. However, many people feel this is a doubtful proposition in South Asia and Africa. Only limited resources were made available for vaccine development. They still need a more heat stable and antigenic vaccine and better diagnostic tools.

Henderson said the issue has been raised whether it might be possible to vaccinate at birth against many different antigens. There is a proposal from UNICEF to develop a multivalent "children's vaccine." Henderson said this would be ideal, but it is not practical. However, several antigens given at or near birth may be possible. He said there is now a major effort in vaccine development research in this area, and hopefully a plan will be developed within a year.

Lvov then spoke about U.S.-Soviet cooperation on arboviruses. He said this cooperation would be beneficial to both countries, and eventually to third countries. He explained that in June 1990 Baker and Shevardnadze signed an agreement which included cooperation on arboviruses. In July, two American specialists worked with Soviet institutes in Siberia to collect field material in unexplored territories. The U.S. got 1/3, and the Soviets kept 2/3 of the materials for analysis. Later they will get together to share their results. He said this was the first joint field expedition in the Soviet Union beyond the Ural Mountains. He said they are exchanging information on the breakout of arboviral infections, particularly in the Soviet Union--information which used to be classified data. It is a continuous but confidential exchange of information about outbreaks of Crimean hemorrhagic fever and other arboviruses. Lvov said there are additional U.S.-Soviet contacts on a non-currency exchange basis. Next summer there will be another expedition in areas near the border that are closed even to Soviet citizens. Lvov stressed how difficult it is now to arrange these exchanges because his institute has to pay for internal transport and hotels in hard currency. It is unresolved how the U.S. will pay for this work. Lvov said the Soviet side has only \$45,000 for all the cooperative work in this area. That amount is already insufficient, and it will not be adjusted for inflation. Lvov added that he liked Steinbruner's earlier idea that military medical institutions do some research jointly on areas of mutual interest.

Rayevskiy reiterated that the Army Medical Services of both countries

could fruitfully cooperate in military epidemiology. He invited Monath and his colleagues to come to the Institute of Military Medicine in Leningrad to set a precedent for broader contacts, including the exchange of researchers at each side's military medical research institutes.

Lederberg said the issue now is less how potential adversaries cooperate toward peace and more what can we do together to prevent the possibility of BW arising elsewhere in the world. He raised the separate issue of how to deal with concerns in our own countries about the legitimacy and necessity of conducting military medical research.

Steinbruner noted that cooperation to prevent the spread of technology to weapons applications is a broader issue. In the U.S., there is an effort to redefine our attitudes about the flow of dual use technology to the Soviet Union and focus more on better cooperation to regulate weapons exports throughout the world. Some technologies, like supercomputers, are more difficult to decontrol since they have direct weapons applications.

Regarding the public's concerns about military medical research, Ivanov said all you can do is discuss it openly. He asked whether the problem was so serious in the U.S. that it actually impedes research.

Lederberg responded that there have been serious charges leveled against the Army. He mentioned Rep. Owens' bill in Congress to move all medical research from the military to NIH. Lederberg said were this to happen, military medicine would likely be underfunded. Lederberg mentioned the recent GAO investigation of the U.S. BW Defense Research Program (BWDRP) done at the request of Senator Glenn. He said that due to a release of CW in a field test in Utah years ago, there is a history of public mistrust about these programs.

Regarding cooperation, Schweitzer said the principal prohibition on the Soviet side seems to be a financial constraint. In the U.S., concerns about technology transfer are gradually subsiding; there are new concerns about intellectual property rights. He said cooperative biomedical research has not received priority from funders in part because the payoff hasn't been well articulated. He said it is necessary to explain the success and benefits of cooperation such as Lvov described. It is helpful in advancing science and reducing the likelihood of dangerous activities.

Lederberg said many in the biomedical community feel that more needs to be done to improve health in less fortunate areas of the world.

Prozorovskiy said in the 1970's his institute developed models of global influenza epidemics which allowed them to successfully predict the development of real epidemics and take preventive measures. He proposed as an area for fruitful cooperation the exchange of information through the CDC mechanism on mathematical prognostication of epidemics.

Lederberg stressed the importance of political leaders understanding that outbreaks of disease anywhere are of direct concern to their own people. Ivanov said the Soviet government well understood this point and the funding priorities, but lacked the hard currency to deal with the priority areas like AIDS.

Henderson expressed disappointment in the relatively limited interest of the U.S. in international and third world health issues. The military is the sector most active in tropical disease research. Agricultural scientists are much more active internationally. He said there is not a fundamental intellectual interest in tropical disease within the American biomedical community, and therefore there is no funding. He said there has been a curious complacency about the possible emergence of new infectious agents, although AIDS has been a sobering experience. Henderson said we needed a broader surveillance/research mechanism to detect unusual outbreaks of infectious diseases.

Lvov said the USSR had an all-Union Center of Ecology of Infectious Agents that monitors and conducts surveillance of infectious diseases in the Soviet Union. It works in cooperation with local health organizations.

Prozorovskiy said a domestic system for surveillance and collection of specimens, etc. already exists. This system could provide a basis for a global system in cooperation with the WHO.

Monath said the U.S. military labs have a responsibility to contribute to the surveillance of disease overseas. There are ten such overseas labs that monitor natural disease hazards. He asked what similar activities the Soviet Union had, and where there could be more bilateral communication in this field. Monath added that the WHO system of collaborating centers of reference and research has eroded over the last fifteen years or so.

Rayevskiy said the Soviet Army has no such labs outside its borders. However, military medical personnel units are deployed with the Army to study new areas. There were military medical personnel, for instance, with the

Soviet Army units in Czechoslovakia, Poland and Mongolia. Rayevskiy said by 1995 the Soviet Army would be leaving all these areas, and along with it these practical units for epidemiology are also being reduced even though this does not necessarily make medical sense.

Rayevskiy said the USSR borders on many countries that could bring infections to its territory. The absence of such overseas monitoring centers is not wise. He said he did not know how they would resolve this problem in the future; however, Rayevskiy said he thought it would be proper to set up a network of observation centers along the Soviet border to conduct surveillance of disease outbreaks.

Lederberg noted that openness about BW-related activities was inter-related with opportunities for cooperation in international health. Confidence is a precondition for public and political support.

Henderson discussed the impressive surveillance capability of the CDC, noting that it has been asked to participate in international epidemic surveillance. It has also helped other countries develop the capability to respond to unusual outbreaks. Henderson noted that there is a consultative group of fifteen international centers dealing with international problems in agriculture. He said he supported the development of a more effective system of international epidemiologic surveillance for human disease.

Vorobyev said the USSR needed to unify its several different national systems of surveillance. They have an anti-plague system, a food sanitation system and an AIDs monitoring system.

Lederberg suggested there be an exchange of scientists in the epidemiologic surveillance systems of both countries. Henderson agreed this could readily be done, noting that the CDC does host people from other countries. Lederberg suggested that both sides give high priority to trying to arrange such cooperation.

Lederberg then raised the subject of cooperation against third party threats in the BW area. He noted the concerns about Iraq's BW capability and possible use in the event of war. He asked what should be done about this. Emphasizing how important it was that clear signals be sent internationally, Lederberg said the Soviet Union had a big role to play with the U.S. and other nations in declaring the gravity of any use of BW by Iraq. For Iraq to set the example of use of BW would open the door to terror.

Rayevskiy agreed that the precedent of using BW could have unpredictable consequences. He said there was no doubt that Saddam would resort to anything without moral consideration if he thinks it is necessary. Rayevskiy said on the governmental level there should be a joint declaration by scientists of both sides warning Saddam. On the practical level, efforts should be made to find out what agents and what capabilities for delivery Saddam has, what immunization measures have been taken for the Iraqi Army. Countermeasures such as vaccination, emergency prophylaxis, and neutralization measures should then be prepared on the basis of this information.

Lederberg suggested that bilateral intelligence cooperation about this would be helpful if it were possible. Prozorovskiy said it would be important in general to create a unified bilateral pool of information about BW protection measures against third parties or terrorists.

Henderson said a clear warning through the UN or a private group of scientists against BW use would be very desirable.

Oznobischev said the BWC should eventually have a system of sanctions in the event of violation of the Convention.

Ivanov, noting that anthrax vaccines are produced in Stavropol, said a tangible proof of U.S.-Soviet cooperation against the threat of Iraqi BW attack would be if the Soviets were to sell their vaccines to the U.S. (This offer was later re-emphasized privately in a way that left no doubt this was an officially-approved suggestion.)

During a lengthy discussion of an appropriate response of the two delegations to recent reports emanating from the Middle East that Iraq may be prepared to use BW, Schweitzer suggested that the two delegations might wish to recommend to their respective Academies that a joint statement be issued concerning potential use of BW by Iraq. Ultimately, it was decided on the American side that it would be more appropriate for scientists to speak out as individuals on this matter if they so chose.

How Can Civilian Medical Professionals in Each Country Achieve Credible Oversight and Self-Inspection of Military Research and Development Programs in Microbiology and Infectious Disease?

Lederberg made the opening presentation in which he described the oversight systems to which the U.S. BWDRP is subject. These include

Congressional oversight and FDA, OSHA and EPA regulations. He discussed the semi-annual reports to Congress on the BWDRP and also the recent GAO audit of the program requested by Senator Glenn. He summarized the GAO report as saying that the Army has fulfilled its legal requirements in reporting to Congress, but that providing more information would be a positive thing.

Lederberg said he was asked to chair a new Defense Science Board task force to evaluate the BWDRP for scientific validity, resource allocation, compliance with the BWC, and to improve public confidence. The panel includes retired Chief of the Army Jack Vessey and several prominent civilian scientists. They will be given clearance to examine all aspects of the program. They will also provide scientific guidance to be sure it is addressing the right questions.

The task force will issue a public report and hold some public hearings. Lederberg predicted there could be a recommendation for continuing independent oversight of the program. Lederberg said the free press and Congressional hearings before the authorizing and appropriating committees also play important oversight roles.

Rayevskiy asked if the task force would have access to classified programs and activities. Lederberg said he insisted on this and that he would not sign a report without confirmation that he had reviewed the entire program.

Prozorovskiy said the Army should turn this research and the funding for it over to civilian agencies. He said the recently passed U.S. domestic legislation on BW compliance was a very important legislative act.

Rayevskiy recalled that there have been some stormy discussions over the fact that the U.S. has not declared in its BWC UN submissions the names of foreign labs doing contract work for the BWDRP. Lederberg said he did not know the status of that disclosure, but believed that the information should be released since the Army maintains that its program is open. He said he would look into it.

Monath said overseas contractors are subject to oversight: They must submit a safety plan and submit to safety inspections, etc. He agreed that foreign labs doing contract work for the BWDRP should be part of the UN declaration, and perhaps they have been. He said they are treated the same as contractors within U.S. boundaries.

Schweitzer asked about oversight in the Soviet Union. Will the Supreme Soviet provide effective oversight? Will military researchers publish in the open press? What are the reputable journals for discussion of these matters in the Soviet public?

Ivanov responded that the Soviet working group already recommended to its government that the Supreme Soviet provide oversight. He recalled that Prozorovskiy suggested this idea at our meeting a year ago and it has been approved. The question is when the Supreme Soviet will write the implementing legislation. He said the U.S. law sponsored by Sen. Kohl would provide an impetus for the Supreme Soviet to take an analogous step.

Rayevskiy responded to Schweitzer saying their military medical scientists publish in open journals like Microbiology, and they also participate in international scientific conferences. He said Krasnaya Zvezda also publishes some material concerning scientific/military research.

Sverdlov said the Supreme Soviet is moving toward controlling everything including military questions. There is some progress in this direction. For instance, the Defense Ministry budget is now being examined by the Supreme Soviet Committee. However, Sverdlov said it is hard to predict what will be the final result.

Sverdlov said the press no longer faces the restrictions it once did. There are critical examinations of the defense budget. However, some papers try to hold on to past tendencies. He noted how hard it is to predict what will happen; he turns on his TV here everyday to see if anything bad has happened in Moscow.

What Are Good Questions for the Upcoming Biological Weapons Convention Five Year Review Conference?

The first item discussed under this topic was a recent report put out by the Federation of American Scientists entitled, "Proposals for the Third Review Conference of the Biological Weapons Convention." Lederberg said it was important to read and critique this report because it is being widely circulated in the scientific community and to governments, and therefore, these working groups should be aware of the report and should indicate to their respective governments whether they are in agreement with it.

In general, the two sides agreed that the FAS report proposed

unnecessary restrictions on legitimate scientific research, and that the proposed reporting requirements were too elaborate and restrictive. There was a lengthy and detailed discussion about each FAS proposal.

For instance, Chanock expressed concern that the FAS proposed Article 1A as now written could be interpreted as directly prohibiting the use of contemporary techniques of molecular biology to develop more effective and safer vaccines against agents and toxins that are potential biological weapons, but which also continue to be important causes of disease in civilian populations worldwide. He said in most cases, the development of such needed vaccines would include the construction of recombinants that express one or more of the protective antigens of the potential weapons agent. These recombinants would qualify as creations with altered properties under proposed Article 1A and could be viewed by some as subject to prohibition without regard to whether alteration conferred beneficial (i.e. prophylactic) or detrimental properties. Chanock said in his view the most effective way to realize the benefits of research while precluding the dangers is to: 1) conduct research on vaccines for potential weapons agents openly and under conditions of regulation that now obtain for all vaccines; and 2) disclose in detail and at regular intervals the usage of these vaccines and the populations immunized.

Individuals on both sides expressed serious reservations about some of the other FAS proposals. In the end, Lederberg recommended that members of each delegation write independently to the FAS with their comments. Furthermore, he suggested that each side advise its own government if it has serious differences with the final FAS report. Lederberg noted that governments should consult with a broader segment of the scientific community.

Returning to the issues of conducting inspections to verify compliance with the BWC, Lederberg noted that the Chemical Weapons Convention verification provisions under discussion may not provide the best model, as people had hoped at one time. There are concerns about the intrusiveness of inspections and about the possible loss of intellectual property. He said indemnification provisions could help protect against the loss of proprietary information during inspections. Lederberg said the willingness to be inspected is important, but inspections cannot ensure compliance. Furthermore, the financial cost of inspections may not be worth what is gained

from them. He said self inspection was the primary confidence-builder.

Rayevskiy noted that he had earlier sent his views on Shelokov's paper on how to conduct an inspection. Rayevskiy suggested that the number of inspectors be limited to 10 and they all must have specializations appropriate to the facility being inspected. He also discussed the importance that inspectors be bound not to disclose proprietary information.

Shelokov said he had no problem with Rayevskiy's suggestions and that he would revise his paper taking Rayevskiy's points into account.

Oznobischev said there should be provisions to conduct a specified number of inspections wherever the inspecting side wants, to enable inspection of undeclared facilities and suspect sites. He said that the threat of short-notice inspections is also an important deterring factor.

Steinbruner noted that at the moment in the CW Convention negotiations the U.S. is advocating the right to refuse a challenge inspection. The Chinese position is that challenges be pre-screened by a designated authority to see if they are legitimate and worthy of being carried out.

Henderson suggested we would be better served by more collaboration in the labs than by more inspections.

Future Work

Ivanov suggested that a small group of four--two Soviets and two Americans--continue discussing how to classify potential BW agents and regulate legitimate work with them. He suggested this small group could continue its dialogue by means of FAX and then meet once more in the spring to finalize its work. He suggested the group be Monath, Steinbruner, Rayevskiy and Vorobyev.

Lederberg said the two full working groups should hold in reserve the possibility of a future meeting next summer or fall--either before or after the next BWC Review Conference. Ivanov agreed the groups should keep their options open for a future meeting.

Lederberg said the Americans would try to FAX their ideas about categorizing agents to Ivanov by the middle of January. The smaller group can then decide whether a face-to-face meeting is necessary.

General Observations

In private sessions, the Soviets were extremely worried about the domestic political situation in the Soviet Union. Some of them complained bitterly about the scientific brain drain occurring because the desperate economic situation is driving Soviet scientists to accept positions in the West, where many then choose to stay. Sverdlov complained that representatives of American universities and companies were coming to his institute and actively recruiting his best people to come to the U.S.

Ivanov and others also described the difficulty of running an institute in the current climate where a) hard currency is insufficiently available to buy equipment and interact with the international scientific community; and b) the locus of power shifts so often that an institute director does not know to whom to go to get a decision or whether that decision will have any staying power.

As far as the subject of this meeting, Ivanov appears ready to make recommendations to his government in advance of the next BWC Review Conference and then terminate his chairmanship of this activity, which has clearly not been a top priority for him.

The American side will need to evaluate independently whether it can usefully contribute more in the area of strengthening the BWC and promoting confidence through greater scientific openness.